



B O A R D O F S T U D I E S
NEW SOUTH WALES

2009 HSC Metal and Engineering Marking Guidelines

Section I

Question	Response
1	B
2	A
3	B
4	C
5	D
6	C
7	C
8	B
9	D
10	A
11	D
12	C
13	A
14	A
15	A

Section II

Question 16 (a)

Competencies assessed: MEM 9.2B Interpret technical drawing

MARKING GUIDELINES

Criteria	Marks
• Correctly names the type of drawing	1

Question 16 (b)

Competencies assessed: MEM 9.2B Interpret technical drawing

MARKING GUIDELINES

Criteria	Marks
• Correctly answers the number of holes	1

Question 16 (c)*Outcomes assessed: MEM 12.24A Perform computations***MARKING GUIDELINES**

Criteria	Marks
• Correctly calculates the clearance showing all appropriate working	2
• Correctly calculates the clearance OR	1
• Incorrectly calculates the clearance showing the appropriate working	

Question 16 (d)*Outcomes assessed: MEM 9.2B Interpret technical drawing***MARKING GUIDELINES**

Criteria	Marks
• Completes table with 3 correct answers	3
• Completes table with 2 correct answers	2
• Completes table with 1 correct answer	1

Question 16 (e)*Outcomes assessed: MEM 18.1C Use hand tools***MARKING GUIDELINES**

Criteria	Marks
• Provides characteristics and features of a suitable method	3
• Outlines a suitable method in general terms	2
• Provides the name of a permanent joining technique with little or no use of industry terminology OR partly describes another technique	1

Question 17 (a)

*Outcomes assessed: MEM 9.2B Interpret technical drawing,
MEM 14.4A Plan to undertake a routine task*

MARKING GUIDELINES

Criteria	Marks
• Proposes a series of steps showing all steps in a logical sequence to construct the CRANK ARM listing tools	5–6
• Proposes a series of steps showing most steps and tools	3–4
• Lists some steps of the marking out AND/OR the manufacturing processes and/or tools	1–2

Question 17 (b)

Outcomes assessed: MEM 15.24A Apply quality procedures

MARKING GUIDELINES

Criteria	Marks
• Indicates the main features of a relevant checking technique	2
• Names or shows some knowledge of a checking technique	1

Question 18 (a) (i)*Outcomes assessed: MEM 12.23A Perform engineering measurements***MARKING GUIDELINES**

Criteria	Marks
• Correctly indicates the degree of accuracy	1

Question 18 (a) (ii)*Outcomes assessed: MEM 12.23A Perform engineering measurements***MARKING GUIDELINES**

Criteria	Marks
• Correctly names the use	1

Question 18 (b)*Outcomes assessed: MEM 18.1C Use hand tools***MARKING GUIDELINES**

Criteria	Marks
• Outlines storage issues for the digital display	3
• Provides appropriate storage issues for digital display	2
• Provides storage issue for a measuring device	1

Question 18 (c)*Outcomes assessed: MEM 12.23A Perform engineering measurements***MARKING GUIDELINES**

Criteria	Marks
• Outlines the advantages of the application of digital technologies to measurement	3
• Outlines an advantage of the application of digital technologies to measurement	2
• Gives a fact about the application of digital technologies to measurement	1

Question 19 (a)

Outcomes assessed: MEM 18.1C Use hand tools

MARKING GUIDELINES

Criteria	Marks
• Correctly provides the name and specific application of the tap shown	2
• Correctly provides the name OR the specific application of the tap shown OR the specific application of tap named	1

Question 19 (b) (i)

Outcomes assessed: MEM 12.24A Perform computations

MARKING GUIDELINES

Criteria	Marks
• Correctly identifies drill size from chart	1

Question 19 (b) (ii)

Outcomes assessed: MEM 12.24A Perform computations

MARKING GUIDELINES

Criteria	Marks
• Correctly calculates the RPM of the drill showing all appropriate working	2
• Correctly gives the RPM of the drill from incorrect data OR • Gives the correct answer without showing any working	1

Question 19 (c)

Outcomes assessed: MEM 18.1C Use hand tools

MARKING GUIDELINES

Criteria	Marks
• Provides an explanation of the precautions required to prevent the breakage of tap in use	4
• Provides a discussion of the precautions required to prevent the breakage of tap in use	3
• Provides an outline of the precautions required to prevent the breakage of tap in use	2
• Names a precaution required to prevent the breakage of a tap in use	1

Section III

Question 20

Outcomes assessed: MEM 15.2A Apply quality systems

MARKING GUIDELINES

Criteria	Marks
<ul style="list-style-type: none"> Using precise industry terminology, demonstrates a well-developed understanding and knowledge of quality improvement strategies Explains, in a well-reasoned and cohesive response, the planning, control, testing and inspection strategies used in quality engineering systems Comprehends an extensive range of benefits for metal and engineering companies and customers derived from implementing quality systems and procedures 	13–15
<ul style="list-style-type: none"> Using specific industry terminology, demonstrates a sound understanding and knowledge of quality improvement strategies Describes, in a clear and organised response, the planning, control, testing and inspection strategies used in quality engineering systems. Comprehends a thorough range of benefits for metal and engineering companies and customers derived from implementing quality systems and procedures 	10–12
<ul style="list-style-type: none"> Using general industry terminology, demonstrates a basic understanding and knowledge of quality improvement strategies Describes, in an organised response, some strategies used in quality engineering systems Comprehends the general range of benefits for metal and engineering companies and customers derived from implementing quality systems and procedures 	7–9
<ul style="list-style-type: none"> Using some industry terminology, demonstrates a limited understanding and knowledge of some quality improvement strategies Outlines some quality concepts used in metal and engineering Demonstrates a minimal knowledge of benefits for metal and engineering companies and/or customers derived from implementing quality systems and procedures 	4–6
<ul style="list-style-type: none"> Lists some quality concepts used in metal and engineering Demonstrates little or no knowledge of benefits for metal and engineering companies or customers derived from implementing quality systems and procedures 	1–3

Question 21

*Outcomes assessed: Manufacturing, engineering and related industry inductions,
MEM 16.7A Work with others in a manufacturing, engineering
or related environment*

MARKING GUIDELINES

Criteria	Marks
<ul style="list-style-type: none"> • Using precise industry terminology, demonstrates an in-depth understanding and knowledge of the personal attributes of employees • Provides an explanation of personal attributes – based on the areas of conduct, safety and communication, in a well-reasoned and cohesive response • Demonstrates extensive understanding and knowledge of the contribution that appropriate personal attributes of an employee have on the effective work of the individual and the workplace 	13–15
<ul style="list-style-type: none"> • Using precise industry terminology, demonstrates a well-developed understanding and knowledge of the personal attributes of employees • Provides a description of some personal attributes – based on the areas of conduct, safety and communication, in a clear and organised response • Demonstrates a thorough understanding and knowledge of the contribution that appropriate personal attributes of an employee have on the effective work of the individual and the workplace 	10–12
<ul style="list-style-type: none"> • Using general industry terminology, demonstrates a sound understanding and knowledge of some of the personal attributes of employees • Provides a description of some personal attributes – mainly based on the area of safety, with some organisation evident in the response • Demonstrates a limited understanding and knowledge of the contribution that appropriate personal attributes of an employee have on the effective work of the individual and/or the workplace 	7–9
<ul style="list-style-type: none"> • Using some industry terminology, demonstrates a basic understanding and knowledge of the personal attributes of employees • Provides an outline of some personal attributes with little organisation evident in the response • Demonstrates a minimal understanding and knowledge of the contribution that appropriate personal attributes of an employee have on the effective work of the individual and/or the workplace 	4–6
<ul style="list-style-type: none"> • Lists some personal attributes with little or no evidence of organisation • Demonstrates little or no understanding and knowledge of the contribution that appropriate personal attributes of an employee have on the effective work of the individual and/or the workplace 	1–3

Question 22

Outcomes assessed: MEM 13.14A Apply principles of occupational Health and Safety, MEM 18.2B Use power tools/hand held operations

MARKING GUIDELINES

Criteria	Marks
<ul style="list-style-type: none"> • Using precise industry terminology, demonstrates an in-depth understanding and knowledge of the appropriate safety issues associated with power tools, in particular portable power drills • Provides a series of potential portable power drill hazards and identifies and considers the related risks involved with their use, in a well-reasoned and cohesive response • Demonstrates extensive understanding and knowledge of the range of control measures to be applied to a portable power drill to ensure it is used in a way to reduce the identified risks and thus injuries 	13–15
<ul style="list-style-type: none"> • Using specific industry terminology, demonstrates a well-developed understanding and knowledge of the appropriate safety issues associated with power tools, in particular portable power drills • Provides a series of potential portable power drill hazards and identifies the related risks involved with their use, in a clear and organised response • Demonstrates a thorough understanding and knowledge of the range of control measures to be applied to a portable power drill to ensure it is used in a way to reduce the identified risks and thus injuries 	10–12
<ul style="list-style-type: none"> • Using general industry terminology, demonstrates a sound understanding and knowledge of some of the more appropriate safety issues associated with power tools, in particular portable power drills • Provides a series of potential portable power drill hazards and risks, in a substantially well-reasoned and organised response • Demonstrates a limited understanding and knowledge of the range of measures to be applied to a portable power drill to ensure it is used in a way to reduce the risk of injury 	7–9
<ul style="list-style-type: none"> • Using some industry terminology, demonstrates a basic understanding and knowledge of some safety issues associated with power tools, in particular portable power drills • Provides potential portable power drill hazards and/or risks, with some organisation evident in the response • Demonstrates a minimal understanding and knowledge of measures to be applied to a portable power drill to ensure it is used in a way to reduce the risk of injury 	4–6
<ul style="list-style-type: none"> • Lists potential hazards, or risks with little or no evidence of organisation • Demonstrates little or no understanding and knowledge of measures to be applied to a portable power drill to ensure it is used in a way to reduce the risk of injury 	1–3

Metal and Engineering

2009 HSC Examination Mapping Grid

Question	Marks	Unit of competency / Element of competency
Section I		
1	1	MEM 18.1C Use hand tools
2	1	MEM 18.1C Use hand tools
3	1	MEM 9.2B Interpret technical drawing
4	1	MEM 9.2B Interpret technical drawing
5	1	MEM 12.23A Perform engineering measurements
6	1	MEM 14.4A Plan to undertake a routing task
7	1	MEM 13.14A Apply principles of occupational health and safety
8	1	MEM 12.24A Perform computations
9	1	MEM 12.23A Perform engineering measurements
10	1	MEM 9.2B Interpret technical drawing
11	1	MEM 13.14A Apply principles of occupational health and safety
12	1	MEM 18.2B Use power tools/hand held operations
13	1	MEM 16.7A Work with others in a manufacturing, engineering or related environment
14	1	MEM 9.2B Interpret technical drawing
15	1	MEM 15.2A Quality systems
Section II		
16 (a)	1	MEM 9.2B Interpret technical drawing
16 (b)	1	MEM 9.2B Interpret technical drawing
16 (c)	2	MEM 12.24A Perform computations
16 (d)	3	MEM 9.2B Interpret technical drawing
16 (e)	3	MEM 18.1C Use hand tools
17 (a)	6	MEM 14.4A Plan to undertake a routine task; MEM 9.2B Interpret technical drawing
17 (b)	2	MEM 15.24A Apply quality procedures
18 (a) (i)	1	MEM 12.23A Perform engineering measurements
18 (a) (ii)	1	MEM 12.23A Perform engineering measurements
18 (b)	2	MEM 18.1C Use hand tools
18 (c)	3	MEM 12.23A Perform engineering measurements
19 (a)	2	MEM 18.1C Use hand tools
19 (b) (i)	1	MEM 12.24A Perform computations
19 (b) (ii)	2	MEM 12.24A Perform computations
19 (c)	4	MEM 18.1C Use hand tools
Section III		
20	15	MEM 15.2A Apply quality systems
21	15	Manufacturing, engineering and related industry induction; MEM 16.7A Work with others in a manufacturing, engineering or related environment
22	15	MEM 18.2B Use power tools/hand held operations; MEM 13.14A Apply principles of occupational health and safety